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# SINAMICS G: Controlling a speed axis with the "SINA\_SPEED" block

SINAMICS G120 / SIMATIC S7-1200

<https://support.industry.siemens.com/cs/ww/en/view/109485727>

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# 1 Introduction

## 1.1 Overview

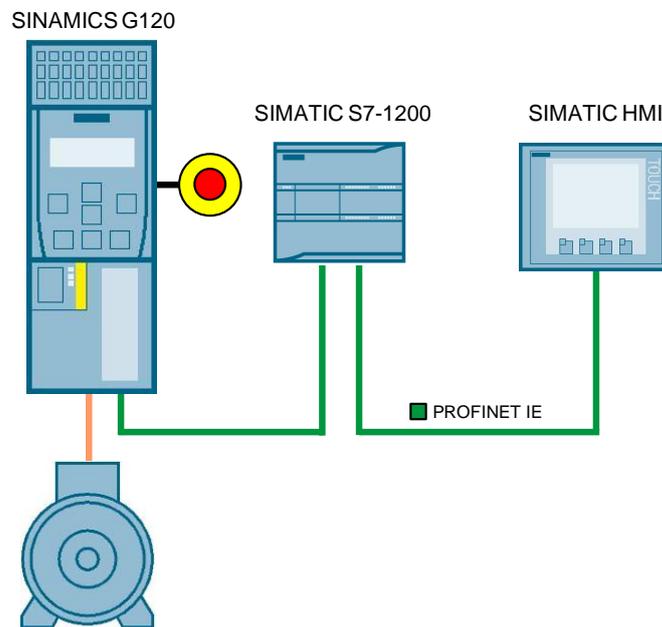
The SIMATIC S7-1200 can be operated as a PROFINET controller. For this, the PROFINET-capable SINAMICS G120 drive can be used as PROFINET device and be controlled by SIMATIC S7-1200.

This application example specifies a setpoint speed for a SINAMICS G120 drive. The drive is controlled using the control word.

### Overview of the application example

The following figure provides an overview of the application example.

Figure 1-1: Overview



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## 1.2 Requirements of the application example

Table 1-1: Requirements of the application example

Requirement	Explanation
Access to process data	The control word switches the SINAMICS G120 drive on or off and specifies the setpoint speed value.
	Pending faults at the drive are displayed and acknowledged.
Monitoring the communication	The communication connection between the controller and the drive are monitored for interruptions.
Safety function of the SINAMICS G120	The SINAMICS G120 will have the option of performing a fail-safe shutdown (STO).

## 2 Engineering

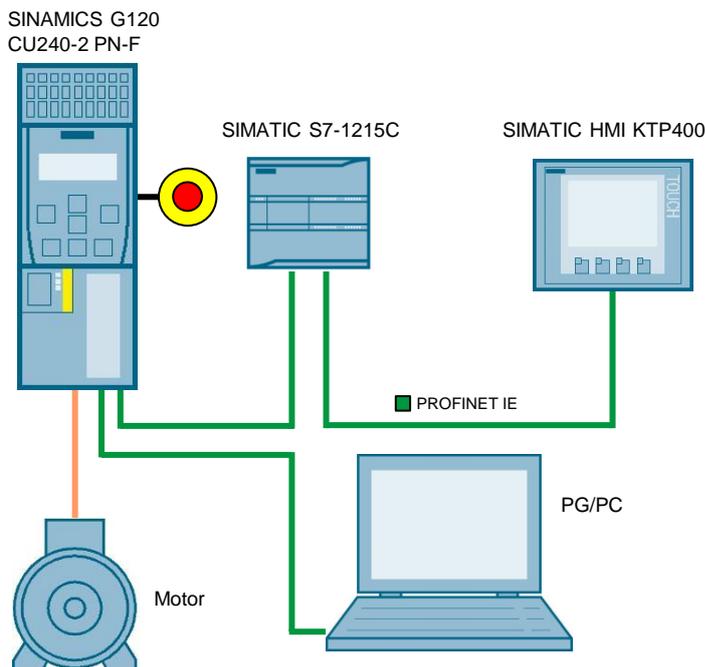
This application description shows the PROFINET connection of a SINAMICS G120 to a SIMATIC S7-1215C with SINAMICS Startdrive. The drive is controlled with the “SINA\_SPEED” block which can be downloaded directly from a standard library in the TIA Portal.

### 2.1 Overview

#### Schematic layout

The figure below shows a schematic overview of the most important components of the solution:

Figure 2-1: Interconnection of the components



#### Advantages

The use of the standard block “SINA\_SPEED” offers a quick and simple option to control the SINAMICS drive.

#### Topics not covered by this application

This application example does not contain a description of:

- Structure and principle of operation of the “SINA\_SPEED” block
- Configuration of the safety functions in the SINAMICS G120 drive

#### Assumed knowledge

Basic knowledge on TIA Portal is assumed.

## 2.2 Description of the core functionality

### Configuring the communication

Both the SIMATIC controller and the SINAMICS converter are configured and programmed in the TIA Portal. To do this, the following data are generated in the hardware configuration:

- IP addresses
- PROFINET device names
- I/O address ranges for the data to be exchanged between the SIMATIC controller and the SINAMICS drive.

However, they can be modified at any time. Which process data are exchanged between SIMATIC controller and SINAMICS drive is specified by the frame type (in the example: standard telegram 1). The telegram type is also configured in the hardware configuration.

### Data exchange

Data exchange between SINAMICS G120 and SIMATIC S7-1200 is done with the "SINA\_SPEED" block in the process data range. The S7-1200 sends the control word and the setpoint speed value to the drive. The drive sends the status word and the actual speed value to the S7-1200.

Process data is transferred cyclically, which means in each bus cycle. The data is therefore transferred as quickly as possible.

## 2.3 Hardware and software components

The application example was created with the following components:

### Hardware components

Table 2-1: Hardware components

Component	Qty.	Article number	Note
CPU 1215C DC/DC/DC (FW 4.2.1)	1	6ES7215-1AG40-0XB0	Alternatively, you can also use a different CPU.
SINAMICS CU240-2 PN-F (FW 4.7.6)	1	6SL3244-0BB13-1FA0	Alternatively, you can also use a different CU with PROFINET.
SINAMICS PM240-2 IP20	1	6SL3210-1PB13-0ULx	-
Asynchronous motor	1	1LA7060-4AB10-Z	Alternatively, you can use a different asynchronous motor.
SIMATIC Panel KTP400 Comfort	1	6AV2124-2DC01-0AX0	The panel is optional.
PROFINET lines	-	6XV1840-2AH10	-
PROFINET connector	6	6GK1901-1BB10-2AA0	-

## Software components

Table 2-2: Software components

Component	Qty.	Article number	Note
STEP 7 Professional V14 Update 2	1	6ES7822-1..04-..	-
WinCC Advanced V14 Update 2	1	6AV210.-....4-0	-
SINAMICS Startdrive V14 Update 2	1	6SL3072-4EA02-0XG0	-

## Example files and projects

The following list contains all files and projects that are used in this application example.

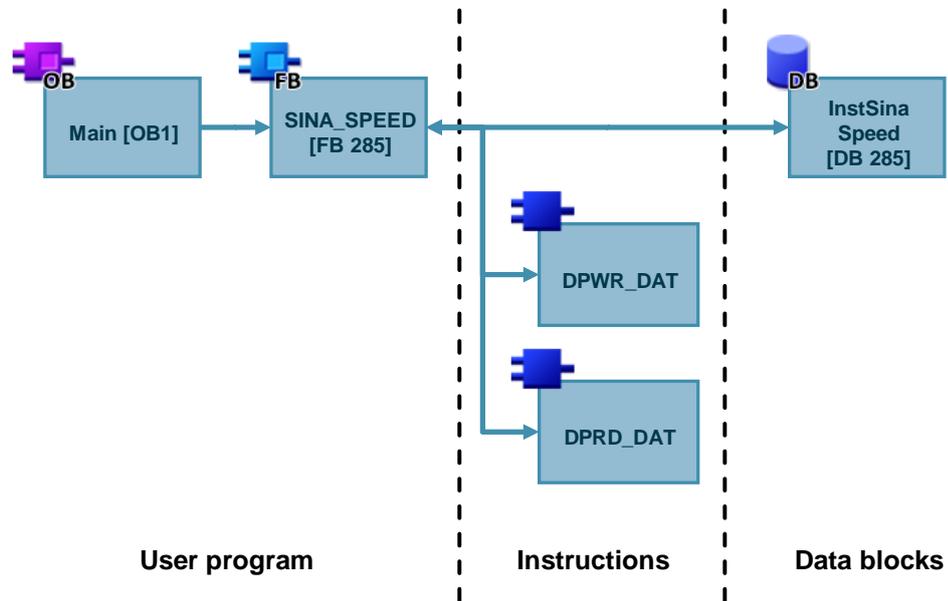
Table 2-3: Example files and projects

Component	Note
109485727_G120_CU240E2PN_at_S7_1200_SINA_SPEED_v10.zip	This zip file contains the STEP 7 V14 project.
109485727_G120_CU240E2PN_at_S7_1200_SINA_SPEED_DOCU_v10_en.pdf	This document.

## 3 Function Principle of the Application Example

### Program overview

Figure 3-1: Program overview



### 3.1 Data exchange to the SINAMICS drive

#### Commands DPWR\_DAT and DPRD\_DAT

The "SINA\_SPEED" block establishes the cyclic communication to a SINAMICS drive. To do this, the block accesses the following command:

- DPWR\_DAT (writing consistent data of a DP standard slave)
- DPRD\_DAT (reading consistent data of a DP standard slave)

These instructions ensure that the consistency is maintained across the entire process data, i.e. all elements of the process data of a device are from the same bus cycle or are transferred within a bus cycle.

#### Note

For more information on the commands DPWR\_DAT and DPRD\_DAT refer to the Online Help of the TIA Portal.

### Control word (STW1) and status word (ZSW1)

The "SINA\_SPEED" function block is used to cyclically control a SINAMICS G120 drive with the standard telegram 1.

Table 3-1: Transmission telegram to the drive

Address	Name	Content
PZD 1	STW1	Control word 1
PZD 2	NSOLL_A	Setpoint speed value

Table 3-2: Receive telegram from the drive

Address	Name	Content
PZD 1	ZSW1	Status word 1
PZD 2	NIST_A	Setpoint speed of the motor

The following bits in the control word or the status word are influenced or displayed in this application example.

Table 3-3: Used bits from control word 1

Bit	Value	Meaning	Remark
0	0	OFF1	Motor brakes with deceleration ramp p1121, the motor is switched off at standstill ( $f < f_{min}$ )
	1	ON	Upon positive edge, the converter switches to "Ready for operation". If "Bit 3" = 1, the converter switches on the motor.
1	0	OFF2	Electrical supply of the motor is switched off. The motor coasts.
	1	No OFF2	-
2	0	Quick stop (OFF3)	Quick stop: The motor brakes with OFF3 deceleration ramp p1135 until standstill.
	1	No quick stop (OFF3)	-
3	0	Lock operation	Switch off motor
	1	Enable operation	Motor ready for switch on
4	0	Lock ramp-function generator	Ramp-function generator output is set to 0 (quickest possible brake operation)
	1	Enable ramp-function generator	Possible to enable ramp-up function generator
5	0	Stop ramp-function generator	The ramp-function generator output is "frozen"
	1	Continue ramp-function generator	The value of the ramp-function generator is updated
6	0	Lock setpoint	The motor brakes with deceleration ramp p1121
	1	Enable setpoint	Motor can accelerate to the setpoint value with ramp-up time p1120
7	0	No fault acknowledgement	Pending faults are not acknowledged
	1	Acknowledge fault	Pending faults are acknowledged with a positive edge
10	0	No control by PLC	Process data invalid
	1	Master control by PLC	Process data valid, master control via field bus
11	0	No inversion of direction	No inversion of the setpoint value
	1	Inversion of direction	The setpoint value is inverted

Table 3-4: Used bits from status word 1

Bit	Value	Meaning	Remark
2	1	Enable operation	Motor can follow the setpoint value (status word 1 bit 3 enabled)
3	1	Fault active	There is a fault in the converter
6	1	On-inhibit active	The motor is only switched on again after re-starting (status word 1 bit 0).

**Note** More information on the SINAMICS G120 drives can be found in the manuals [3\](#).

### 3.2 “SINA\_SPEED” function block

**Note** The “SINA\_SPEED” block is contained in the “DriveLib” library.

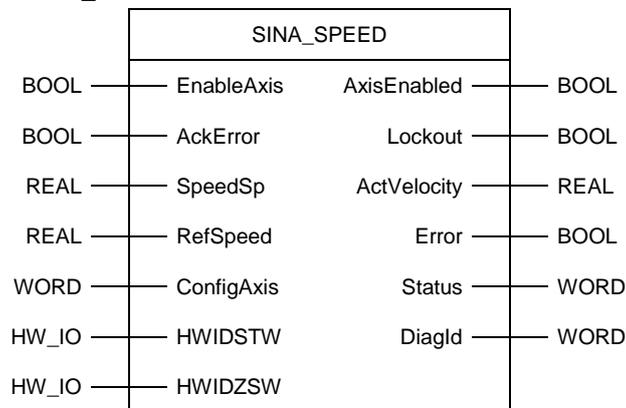
<https://support.industry.siemens.com/cs/ww/en/view/109475044>

#### Block call

The “SINA\_SPEED” block can be called in the following organization blocks (OBs):

- Cyclic task: OB1
- Interrupt OB: for example OB32

Figure 3-2: “SINA\_SPEED” block call



#### Block parameters

The following tables list the input and output parameters of the “SINA\_SPEED” block.

Table 3-5: “SINA\_SPEED” input parameters

Name	Type	Start value	Function
EnableAxis	BOOL	FALSE	Start/stop of the drive (assignment of drive control word 1 bit 0)
AckError	BOOL	FALSE	Acknowledgment of errors in the drive (assignment of drive control word 1 bit 7)
SpeedSp	REAL	0.0	Definition of the speed [1/min]
RefSpeed	REAL	0.0	Reference speed of the drive. (Entry must be identical with drive parameter p2000)

### 3 Function Principle of the Application Example

Name	Type	Start value	Function
ConfigAxis	WORD	16#003F	Assignment of the drive control word (drive parameter r2090). The start value 16#003F sets bits 1 to 6 to TRUE: Bit 1: OFF2 Bit 2: OFF3 Bit 3: Enable operation Bit 4: Enable ramp-function generator Bit 5: Continue ramp-function generator Bit 6: Enable speed setpoint
HWDSTW	HW_IO	0	Hardware ID setpoint value (see section Telegram slot)
HWDZSW	HW_IO	0	Hardware ID actual value (see section Telegram slot)

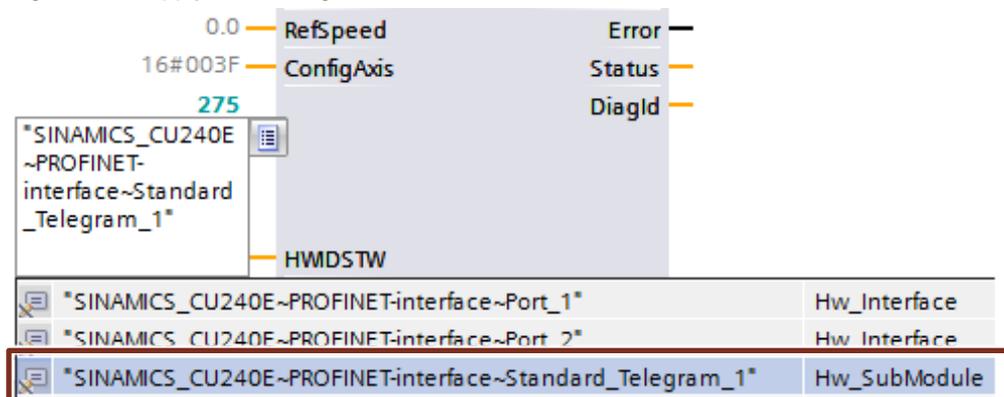
Table 3-6: "SINA\_SPEED" output parameter

Name	Type	Start value	Function
AxisEnabled	BOOL	FALSE	Drive operation is enabled
Lockout	BOOL	FALSE	On-inhibit of the drive is active
ActVelocity	REAL	0.0	Actual speed of the drive
Error	BOOL	FALSE	Drive fault active
Status	WORD	0	Display of status values: 16#7002: No fault 16#8401: Drive fault active 16#8402: On-inhibit active 16#8600: DPRD_DAT error 16#8601: DPWR_DAT error
DiagId	WORD	0	Expanded communication fault (error when calling up a command)

#### Telegram slot

The block inputs HWDSTW and HWDZSW must reference to the hardware ID of the standard telegram.

Figure 3-3: Supply of the telegram slot



When using a PROFINET connection between the SIMATIC controller and the SINAMICS G120 drive, the same hardware ID must be configured for block inputs HWDSTW and HWDZSW.

**Note**

For more information on the “SINA\_SPEED” block refer to the Online Help of the TIA Portal or to the “DriveLib” documentation.

<https://support.industry.siemens.com/cs/ww/en/view/109475044>

**Instance data block**

The “SINA\_SPEED” block interface is restricted to few inputs and outputs. All signals of standard telegram 1 are available via the instance data block at all times.

The instance data block “InstSinaSpeed” contains the following information:

- Function block inputs (1)
- Function block outputs (2)
- Standard telegram 1 structure in the statistical tag range (3)

Figure 3-4: “InstSinaSpeed” instance data blocks

	Name	Data type	Start value	Comment
1	▼ Input			
2	EnableAxis	Bool	0	0->1; 1 = Enable the drive (OFF2 / OFF 3 are 1 in default status) (O
3	AckError	Bool	0	1 = Acknowledge drive error
4	SpeedSp	Real	0.0	Speed standardises with the standardisation factor
5	RefSpeed	Real	0.0	Standardisation factor of speed
6	ConfigAxis	Word	16#003F	binary programmed input to control all functions in the telegram w
7	HMDSTW	HW_IO	0	Hardware Identifier set point slot
8	HMD7SW	HW_IO	0	Hardware Identifier actual value slot
9	▼ Output			
10	AxisEnabled	Bool	0	1 = Drive is enabled
11	Lockout	Bool	0	1 = Drive lockout active
12	ActVelocity	Real	0.0	Actual in [U/min]
13	Error	Bool	0	1 = Error (FB and Infeed)
14	Status	Word	0	Status output (7002 = FB in operation; 8xxx = error description -re
15	DiagId	Word	16#0000	Error codes of the cyclic system funtion blocks DPWR / DPRD_DAT
16	InOut			
17	▼ Static			
18	▶ sxSendBuf	Struct		Send buffer
19	▶ sxRecvBuf	Struct		Receive buffer

### 3.3 Safe torque off STO

#### 3.3.1 STO via digital inputs

The converter with the "Safe Torque Off" (STO) function active prevents the unwanted startup of machine components. This safety function can be configured with specific digital inputs for a SINAMICS G120 drive with a control unit with safety function. To do this, the safety functions must be enabled in the control unit.

**Note**

A detailed description of the configuration of the safety function STO using digital inputs can be found in the application example "SINAMICS G: Speed Control of a G110M / G120 (Startdrive) with S7-1500 (TO) via PROFINET or PROFIBUS with Safety Integrated (via Terminal) and HMI".

<https://support.industry.siemens.com/cs/ww/en/view/78788716>

#### 3.3.2 STO as per SIL 3 with power module PM240-2

The PM240-2 power modules in sizes FSD, FSE and FSF can be used to realize the "Safe Torque Off" (STO) according to EN 13849-1 and SIL 3 according to IEC61508. Two terminal blocks (STO\_A and STO\_B) and two Dip switches are available on the front side of the power module.

**Note**

More information on how to use the STO safety function as per SIL 3 with the PM240-2 power module can be found in the "SINAMICS G120 power module PM240-2" manual.

<https://support.industry.siemens.com/cs/ww/en/view/109482011>

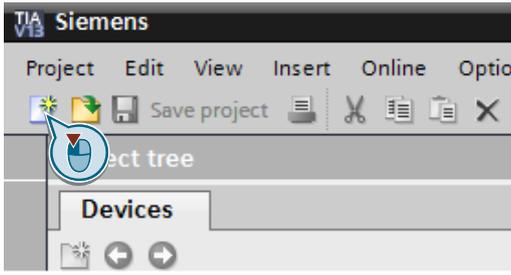
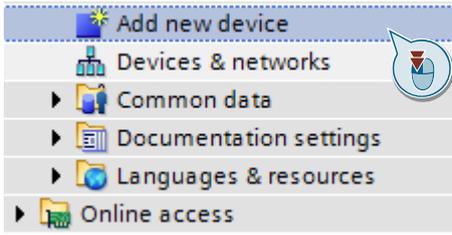
# 4 Configuration and Settings

The step tables below describe how to configure the S7-1200 and the SINAMICS S120 drive. The configuration of the operator panel is not described in this chapter.

A requirement is that the software listed in [Table 2-2](#) is installed on your PC/PG.

## 4.1 Creating the project configuration

Table 4-1: Creating the project configuration

No.	Action	Remark
1.	Open TIA Portal and create a new project.	
2.	Double-click on "Add new device".	
3.	Add your desired controller: 1. Select "Controller". 2. Select the desired CPU. 3. Then click on "OK".	

## 4 Configuration and Settings

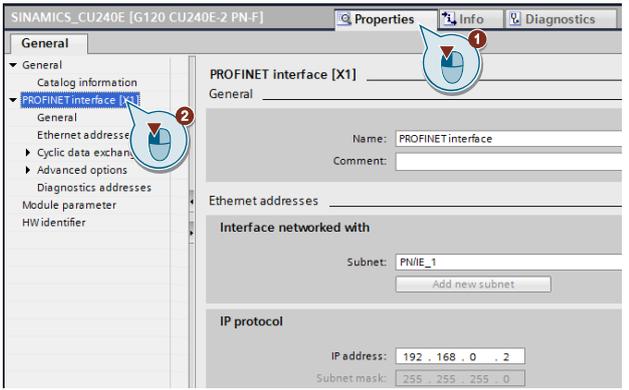
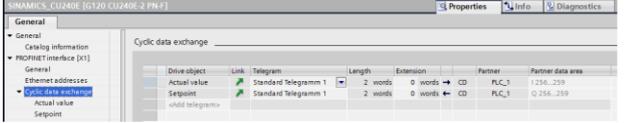
No.	Action	Remark
4.	<p>Open the device configuration of the CPU and configure the PROFINET interface.</p> <ol style="list-style-type: none"> <li>1. Open the "Properties" of the CPU.</li> <li>2. Select "Ethernet addresses".</li> <li>3. Add a new subnet.</li> <li>4. Enter the desired IP address and subnet mask.</li> <li>5. You can also specify the PROFINET device name in this mask.</li> </ol>	

## Configuring the SINAMICS G120 drive

Table 4-2: Adding the drive

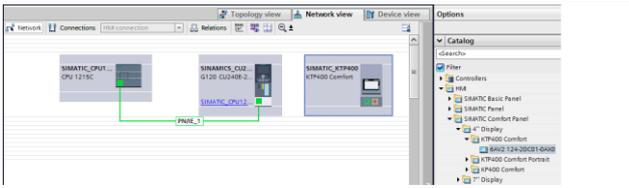
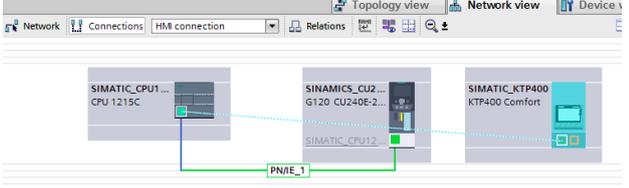
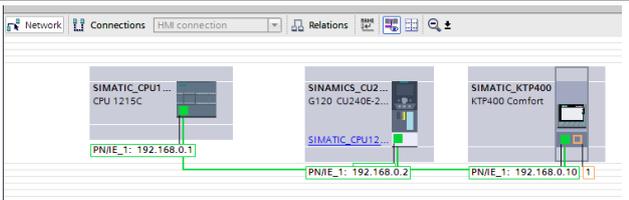
No.	Action	Remark
1.	<p>Select the desired SINAMICS drive.</p> <ol style="list-style-type: none"> <li>1. In the "devices and networks" editor, go to the "Network view".</li> <li>2. Now drag the desired PROFINET-capable SINAMICS drive into the graphic area. (The SINAMICS drive is configured in the TIA Portal using Startdrive)</li> </ol>	
2.	<p>Connect the Ethernet connections of the SIMATIC controller and the SINAMICS drive with each other.</p>	
3.	<p>Assign a power module to the drive added in the network view. (This step is not necessary when using a G120C drive):</p> <ol style="list-style-type: none"> <li>1. Open the "Device view".</li> <li>2. Select a power module from the hardware catalog and add it to the drive.</li> </ol>	

## 4 Configuration and Settings

No.	Action	Remark
4.	Configure the PROFINET interface of the drive: 1. Open the "Properties" of the drive. 2. You can set the IP address and the device name in the "PROFINET interface" settings.	
5.	For data exchange between CPU and drive, leave the setting at standard telegram 1 unchanged.	

### Adding the HMI (optional)

Table 4-3: Adding the HMI

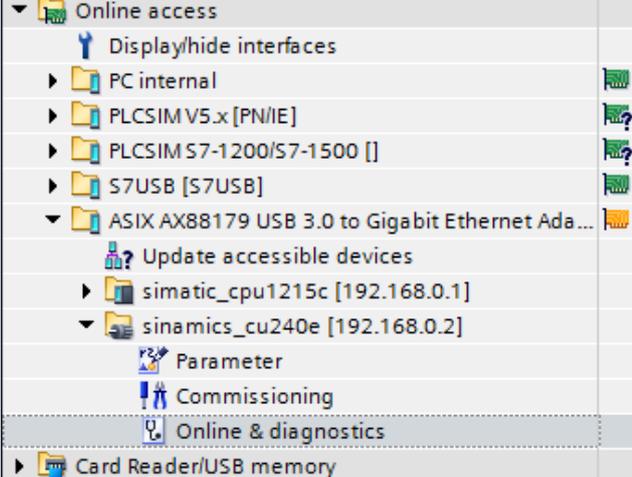
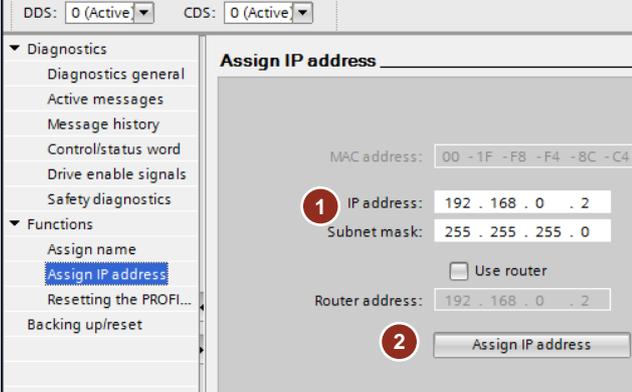
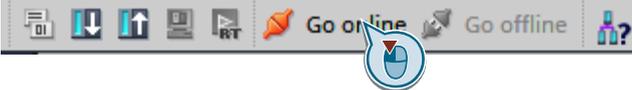
No.	Action	Remark
1.	Add the HMI in the "Network view".	
2.	Configure an HMI connection between CPU and HMI.	
3.	Then, check the PROFINET addresses set.	

## 4.2 Commissioning the SINAMICS drive

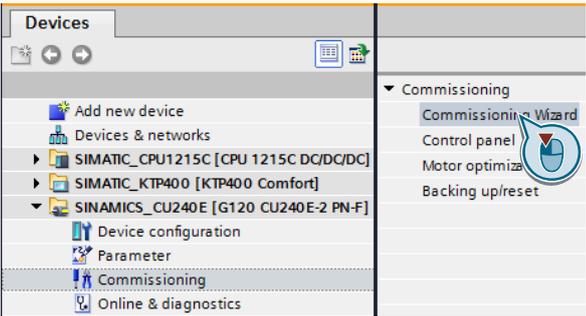
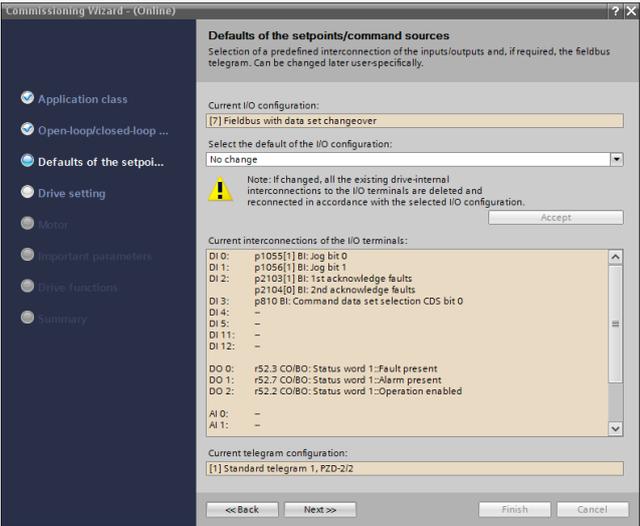
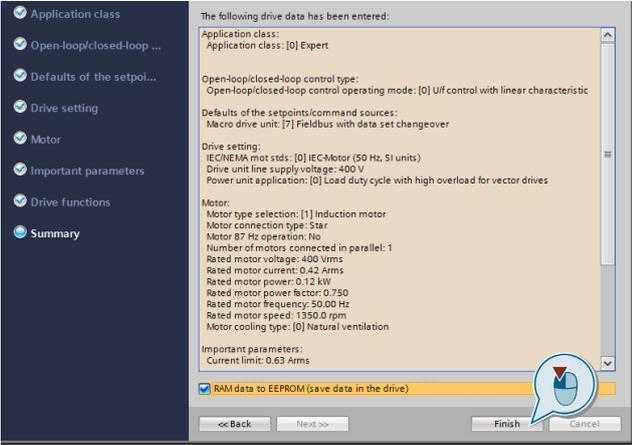
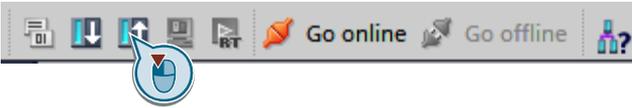
After generating the project configuration, you have to commission the SINAMICS G120 drive. When doing so, the commissioning wizard in Startdrive is followed.

**Note** Information on the configuration and commissioning of drives can be found in the TIA Portal online help.

Table 4-4: Commissioning the drive

No.	Action	Remark
1.	<p>The drive must be assigned the device name to be able to establish an online connection to the drive. To do this, select the interface used in the “Online access” folder. Once the available participants have been updated (Update accessible devices), the devices connected to PROFINET are displayed. For drives, there is the option to assign IP address and device name in the “Online &amp; diagnostics” menu sub-item.</p>	
2.	<p>You can assign IP address and device name in the “Online &amp; diagnostics” menu sub-item.</p> <ol style="list-style-type: none"> <li>1. Enter the IP address or the device name in the respective field.</li> <li>2. Then, assign the drive the address or device name.</li> </ol>	
3.	<p>When the assigned data (IP address and device name) is identical with the configuration of the drive (chapter 4.1), Startdrive can be used to establish an online connection to the drive. To do so, select the drive in the project navigation and click “Go online” in the toolbar.</p>	

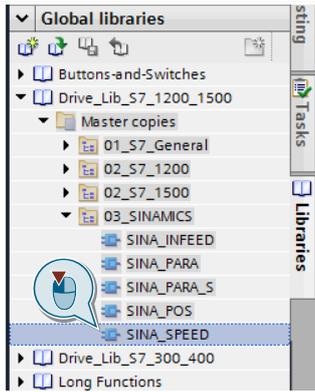
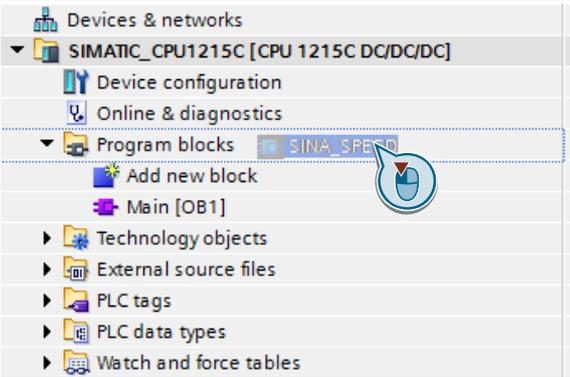
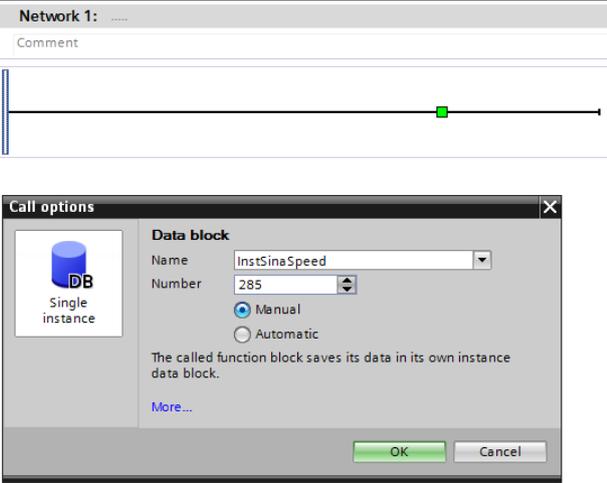
## 4 Configuration and Settings

No.	Action	Remark
4.	The Commissioning Wizard can be found in the drive folder under "Commissioning".	
5.	Follow the Commissioning Wizard. Useful support can be found in the TIA Portal online help. It is particularly important to configure standard telegram 1 to control the communication.	
6.	As a last step of the commissioning wizard, you have to save the drive settings. To do so, check the "RAM data to EEPROM" checkbox and finish the wizard.	
7.	Then disconnect the online connection to the drive and load the configuration stored in the drive into the offline project.	
8.	Save the TIA Portal project.	-

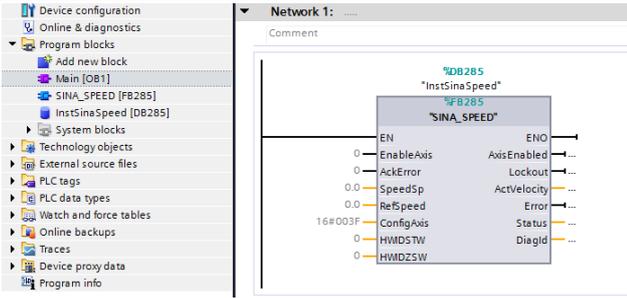
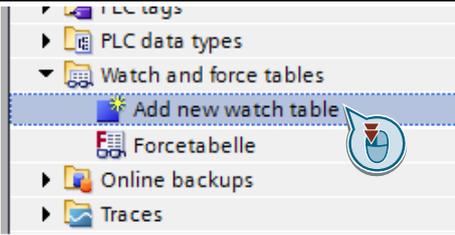
### 4.3 Configuring the S7 program

The following step table shows how to configure a S7 program with the “SINA\_SPEED” function block.

Table 4-5: Configuring the S7 program

No.	Action	Remark
1.	Select the S7-1200 CPU in the project tree.	-
2.	Open the libraries and select the “SINA_SPEED” block from the DriveLib library (V5.0) matching the S7 controller used.	
3.	Then add the block the “Program blocks” folder in the controller.	
4.	Call the “SINA_SPEED” block in the Main OB (OB1). Assign the function block an instance data block. The number of the instance data block can be selected by the user.	

## 4 Configuration and Settings

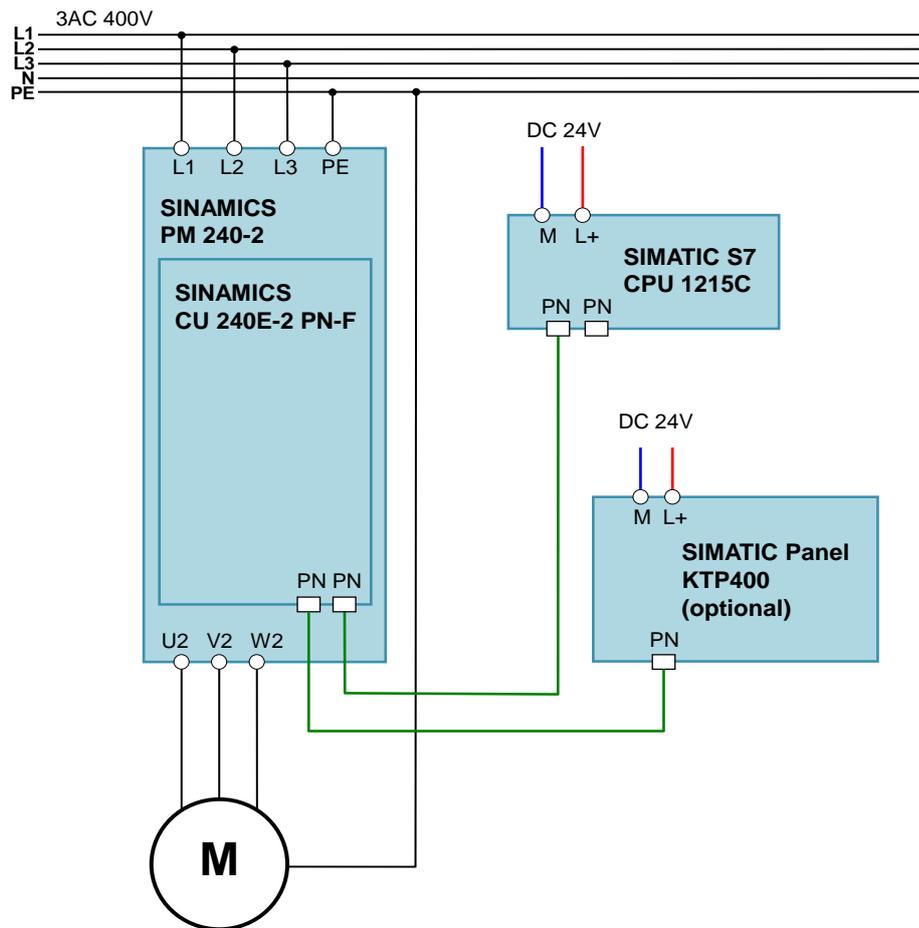
No.	Action	Remark
5.	Connect the inputs and outputs of the block as described in chapter 3.2	
6.	It is recommended to copy the inputs and outputs of the block "SINA_SPEED" into a control panel. (see chapter 6.2)	
7.	Save the project and load the program into the controller.	

# 5 Installation and commissioning

## 5.1 Installing the hardware

The figure below shows the hardware setup of the application.

Figure 5-1: Hardware setup



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**Note**

The setup guidelines for SINAMICS drives and SIMATIC controllers must generally be followed.

## 5.2 IP addresses and device names

The following IP addresses and device names are used in the application example. Subsequent changes can be made at any time.

Table 5-1: IP addresses and device names

Components	Device name	IP address
SIMATIC S7-1200	SIMATIC_CPU1215C	192.168.0.1
SINAMICS G120	SINAMICS_CU240E	192.168.0.2
SIMATIC KTP400	SIMATIC_KTP400	192.168.0.10
PG/PC	-	192.168.0.200

The network mask is always 255.255.255.0 and no router is used.

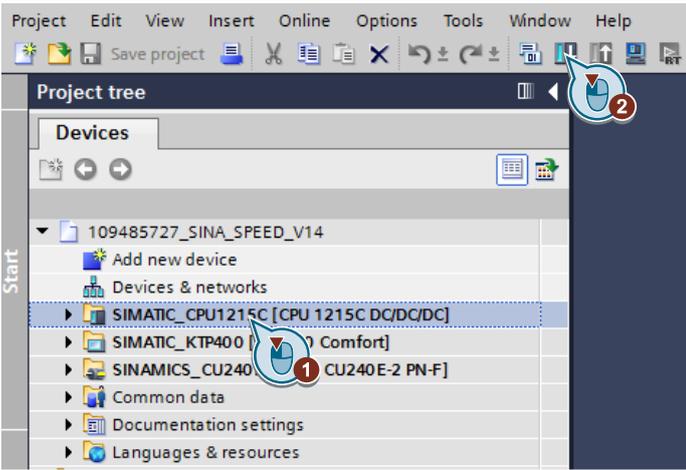
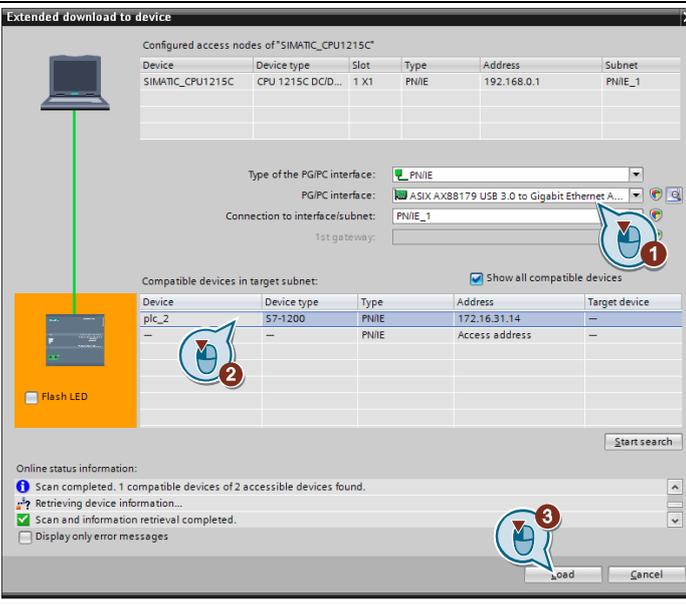
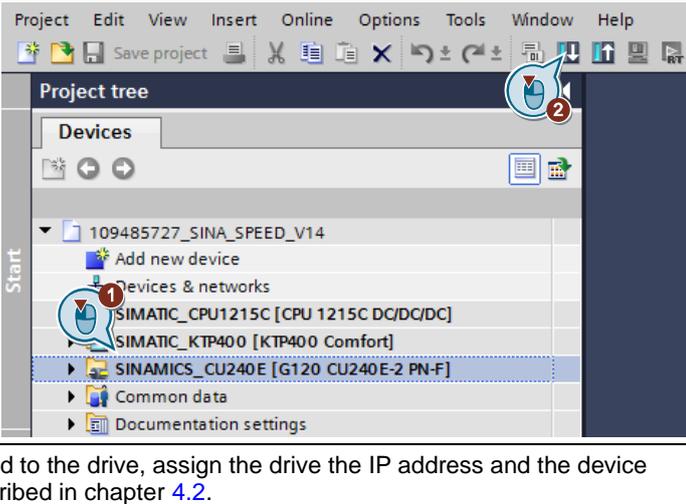
## 5.3 Download the project to the components

The steps listed in the following table show how to load the individual programs of the application example into the components. The SIMATIC HMI is optional.

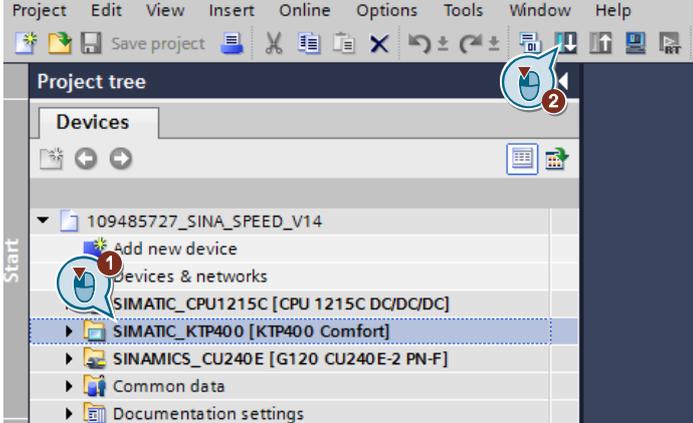
Table 5-2: Download the project to the components

No.	Action	Remark
1.	Retrieve the project contained in the zip file "109485727_G120_CU240E2 PN_at_S7_1200_SINA_SPEE D_v10" to a local directory.	-
2.	Double-click the ap14 file in the project folder just retrieved in order to open the project in TIA Portal.	-
3.	If TIA Portal opens in the Portal view, go to the bottom left to switch to the "Project view".	

## 5 Installation and commissioning

No.	Action	Remark
4.	Load the program of the SIMATIC controller. 1. Select the S7 controller in the project tree. 2. Load the project into the controller.	 <p>The screenshot shows the SIMATIC Manager interface with the 'Project tree' on the left. The 'Devices' folder is expanded, and 'SIMATIC_CPU1215C [CPU 1215C DC/DC/DC]' is selected. A blue callout bubble with the number '1' points to the selected device. Another blue callout bubble with the number '2' points to the 'Add new device' button above the project tree.</p>
5.	As soon as the “Extended download to device” dialog box opens, proceed as follows: 1. Select the settings required for your online connection. 2. Select the CPU. 3. Load the configuration.	 <p>The screenshot shows the 'Extended download to device' dialog box. It contains a table for 'Configured access nodes of *SIMATIC_CPU1215C*'. Below this, there are settings for the PG/PC interface (PNIE) and the connection to the interface/subnet (PNIE_1). A table titled 'Compatible devices in target subnet' shows two devices: 'plc_2' (S7-1200) and an 'Access address' device. A blue callout bubble with the number '1' points to the 'Type of the PG/PC interface' dropdown. Another blue callout bubble with the number '2' points to the 'plc_2' device in the table. A third blue callout bubble with the number '3' points to the 'Load' button at the bottom right.</p>
6.	Load the configuration into the drive.	 <p>The screenshot shows the SIMATIC Manager interface with the 'Project tree' on the left. The 'Devices' folder is expanded, and 'SINAMICS_CU240E [G120 CU240E-2 PN-F]' is selected. A blue callout bubble with the number '1' points to the selected device. Another blue callout bubble with the number '2' points to the 'Add new device' button above the project tree.</p> <p>When no connection is established to the drive, assign the drive the IP address and the device name. To do so, proceed as described in chapter 4.2.</p>

## 5 Installation and commissioning

No.	Action	Remark
7.	Load the configuration of the HMI.	 <p>The screenshot shows the SIMATIC Manager interface. The 'Project tree' on the left displays the project structure for '109485727_SINA_SPEED_V14'. Under 'Devices &amp; networks', the 'SIMATIC_KTP400 [KTP400 Comfort]' device is selected and highlighted with a blue dashed border. A callout box with a red '1' points to the 'Add new device' icon in the tree. Another callout box with a red '2' points to the 'SIMATIC_KTP400' device name. The main workspace on the right is currently empty.</p>
		<p>You have to set the correct IP address in the SIMATIC HMI in order to load successfully. Information on how to enter the network settings of the HMI can be found in the user manual <a href="#">V7</a>.</p>

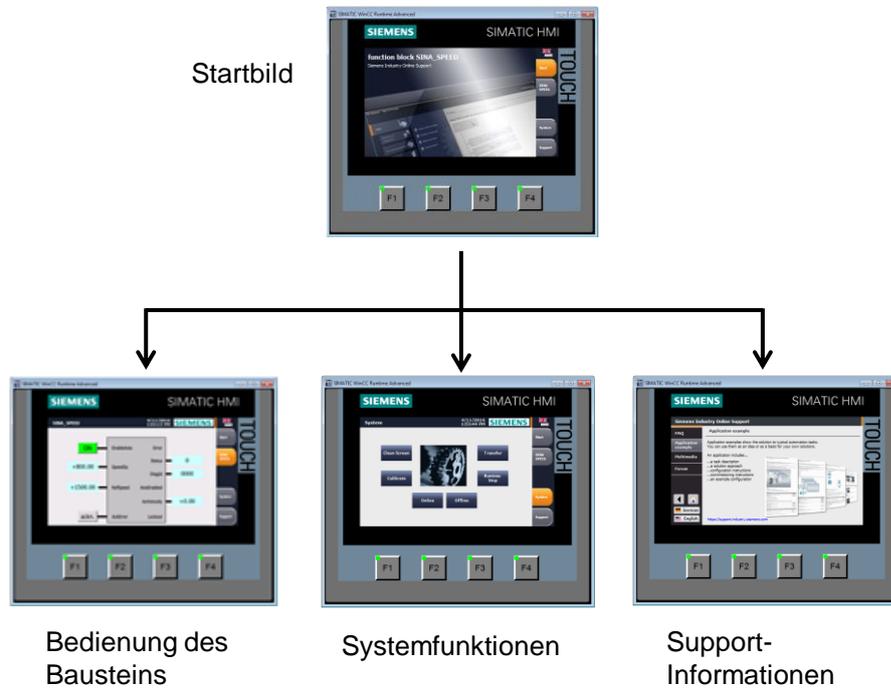
## 6 Operating the application example

 <b>WARNING</b>	<p><b>Make sure that no persons or system components are endangered by the moving drive.</b></p> <p>Take appropriate measures to prevent the drive from exceeding technical or mechanical limits.</p>
---	---

### 6.1 Operation via HMI

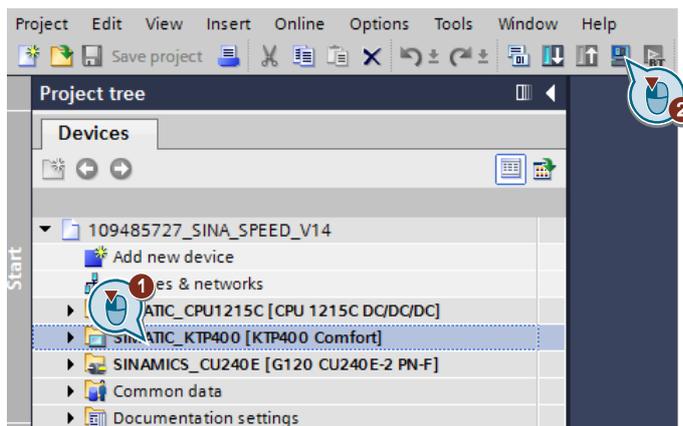
The following operating screens are available in the HMI project for operating the application example. The structure of these screens is shown in the figure below.

Figure 6-1: Overview of the screens



If there is no SIMATIC HMI available, the operator screens can be used in simulation mode. In the simulation mode, the runtime of the operator panel is displayed in a TIA framework.

Figure 6-2: Starting simulation mode



### 6.1.1 Start screen

When activating the SIMATIC HMI or the simulation, the start screen is first displayed.

Figure 6-3: Start screen



A navigation bar is located on the right side of the screen. It is used to go to more operator screens.

Table 6-1: Buttons in the navigation bar

Operation	Action
	Switch between German and English
Start	Back to the start screen
SINA_SPEED	Go to operator screen for "SINA_SPEED" block
System	Go to the HMI system functions
Support	View the support functions

### 6.1.2 Operating the “SINA\_SPEED” block

The schematic call of the block is shown in the “SINA\_SPEED” operator screen.

Figure 6-4: “SINA\_SPEED” operator screen

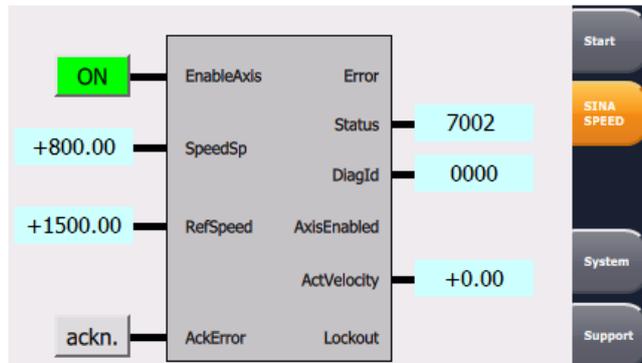


Table 6-2: Input tags

Tag	Type	Operation
EnableAxis	BOOL	These inputs are supplied with buttons. The names in green indicate the inputs are enabled.
AckError	BOOL	
SpeedSp	REAL	These inputs are supplied with values by input and output fields. The values are input using the on-screen keyboard.
RefSpeed	REAL	

Table 6-3: Output tags

Tag	Type	Operation
Error	BOOL	Active faults are indicated with the outputs in red.
Lockout	BOOL	
AxisEnabled	BOOL	Enabled outputs are indicated with green.
Status	WORD	The current values of these outputs are indicated by output fields.
DiagID	WORD	
ActVelocity	REAL	

**Note** The function principle and the admissible values of the inputs and outputs of the block are explained in chapter 3.2.

### 6.1.3 System functions

The system functions of the HMI can be accessed in the “System” operator screen. Figure 6-5: “System” operator screen



Table 6-4: System function buttons

Operation	Action
Clean screen (Clean Screen)	Activate cleaning screen of the HMI
Calibrate touchscreen (Calibrate)	Activation of the calibration of the HMI touchscreen
Online	Activation of the “Online” mode
Offline	Activation of the “Offline” mode
Stop runtime (Runtime Stop)	Terminate runtime
Transfer	Start the program transfer to the HMI

### 6.1.4 Support information

The “Support” button contains information on the service range of the Siemens Industry Online Support.

Figure 6-6: Support information

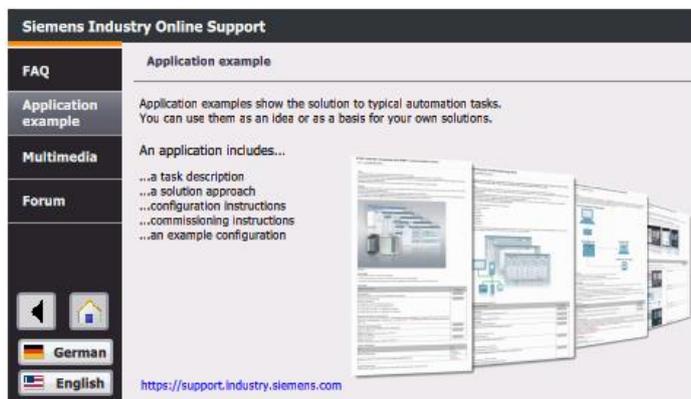
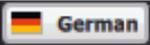


Table 6-5: Buttons in the support information

Operation	Action
	Activating the start screen
	Activating the previous screen
	Switch language to German
	Switch language to English

## 6.2 Operating via the control board

You can also use the application example without an HMI. The watch table “ControlSinaSpeed” has already been created in the project. The tags you can monitor or control are the same which are also displayed at the operator panel.

Figure 6-7: “ControlSinaSpeed” control panel

	Name	Address	Display format	Monitor value	Modify value	
1	*InstSinaSpeed*.EnableAxis		Bool	<input type="checkbox"/> FALSE	FALSE	<input checked="" type="checkbox"/> 
2	*InstSinaSpeed*.SpeedSp		Floating-point number	200.0	200.0	<input checked="" type="checkbox"/> 
3	*InstSinaSpeed*.HWDSTW		Hex	16#0113		<input type="checkbox"/>
4	*InstSinaSpeed*.HWDZSW		Hex	16#0113		<input type="checkbox"/>
5	*InstSinaSpeed*.RefSpeed		Floating-point number	1500.0	1500.0	<input checked="" type="checkbox"/> 
6	*InstSinaSpeed*.AckError		Bool	<input type="checkbox"/> FALSE	FALSE	<input checked="" type="checkbox"/> 
7	*InstSinaSpeed*.ConfigAxis		Hex	16#003F		<input type="checkbox"/>
8						<input type="checkbox"/>
9	*InstSinaSpeed*.Error		Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
10	*InstSinaSpeed*.Status		Hex	16#7002		<input type="checkbox"/>
11	*InstSinaSpeed*.DiagId		Hex	16#0000		<input type="checkbox"/>
12	*InstSinaSpeed*.AxisEnabled		Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
13	*InstSinaSpeed*.ActVelocity		Floating-point number	0.0		<input type="checkbox"/>
14	*InstSinaSpeed*.Lockout		Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>
15						<input type="checkbox"/>
16	*InstSinaSpeed*.sxBuf.STW1		Hex	16#047E		<input type="checkbox"/>
17	*InstSinaSpeed*.sxBuf.Velocity		Hex	16#0889		<input type="checkbox"/>
18						<input type="checkbox"/>
19	*InstSinaSpeed*.sXBuf.ZSW1		Hex	16#EB31		<input type="checkbox"/>
20	*InstSinaSpeed*.sXBuf.Velocity		Hex	16#0000		<input type="checkbox"/>

## 7 Appendix

### 7.1 Service and Support

#### Industry Online Support

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks at:

<https://support.industry.siemens.com>

#### Technical Support

The Technical Support of Siemens Industry provides you fast and competent support regarding all technical queries with numerous tailor-made offers – ranging from basic support to individual support contracts. You send queries to Technical Support via Web form:

[www.siemens.com/industry/supportrequest](http://www.siemens.com/industry/supportrequest)

#### Service offer

Our range of services includes, inter alia, the following:

- Product trainings
- Plant data services
- Spare parts services
- Repair services
- On-site and maintenance services
- Retrofitting and modernization services
- Service programs and contracts

You can find detailed information on our range of services in the service catalog:

<https://support.industry.siemens.com/cs/sc>

#### Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for Apple iOS, Android and Windows Phone:

<https://support.industry.siemens.com/cs/ww/en/sc/2067>

## 7.2 Links and literature

Table 7-1

No.	Topic
\1\	Siemens Industry Online Support <a href="https://support.industry.siemens.com">https://support.industry.siemens.com</a>
\2\	Link to the entry page of the application example <a href="https://support.industry.siemens.com/cs/ww/en/view/109485727">https://support.industry.siemens.com/cs/ww/en/view/109485727</a>
\3\	SINAMICS G120 with CU240B/E-2 Operating instructions <a href="https://support.industry.siemens.com/cs/ww/en/view/109744796">https://support.industry.siemens.com/cs/ww/en/view/109744796</a> List manual <a href="https://support.industry.siemens.com/cs/ww/en/view/109482961">https://support.industry.siemens.com/cs/ww/en/view/109482961</a>
	SINAMICS G120 with CU250S-2 Operating instructions <a href="https://support.industry.siemens.com/cs/ww/en/view/109482997">https://support.industry.siemens.com/cs/ww/en/view/109482997</a> List manual <a href="https://support.industry.siemens.com/cs/ww/en/view/109482981">https://support.industry.siemens.com/cs/ww/en/view/109482981</a>
	SINAMICS G120C Operating instructions <a href="https://support.industry.siemens.com/cs/ww/en/view/109744769">https://support.industry.siemens.com/cs/ww/en/view/109744769</a> List manual <a href="https://support.industry.siemens.com/cs/ww/en/view/109482977">https://support.industry.siemens.com/cs/ww/en/view/109482977</a>
\4\	SINAMICS G120 Power Module PM240-2 <a href="https://support.industry.siemens.com/cs/ww/en/view/109482011">https://support.industry.siemens.com/cs/ww/en/view/109482011</a>
\5\	Speed Control of a G110M / G120 (Startdrive) with S7-1500 (TO) via PROFINET or PROFIBUS with Safety Integrated (via Terminal) and HMI <a href="https://support.industry.siemens.com/cs/ww/en/view/78788716">https://support.industry.siemens.com/cs/ww/en/view/78788716</a>
\6\	System Manual <a href="https://support.industry.siemens.com/cs/ww/en/view/109478121">https://support.industry.siemens.com/cs/ww/en/view/109478121</a>
\7\	Operating instructions <a href="https://support.industry.siemens.com/cs/ww/en/view/49313233">https://support.industry.siemens.com/cs/ww/en/view/49313233</a>

## 7.3 Change documentation

Table 7-2

Version	Date	Modifications
V1.0	06/2017	First version